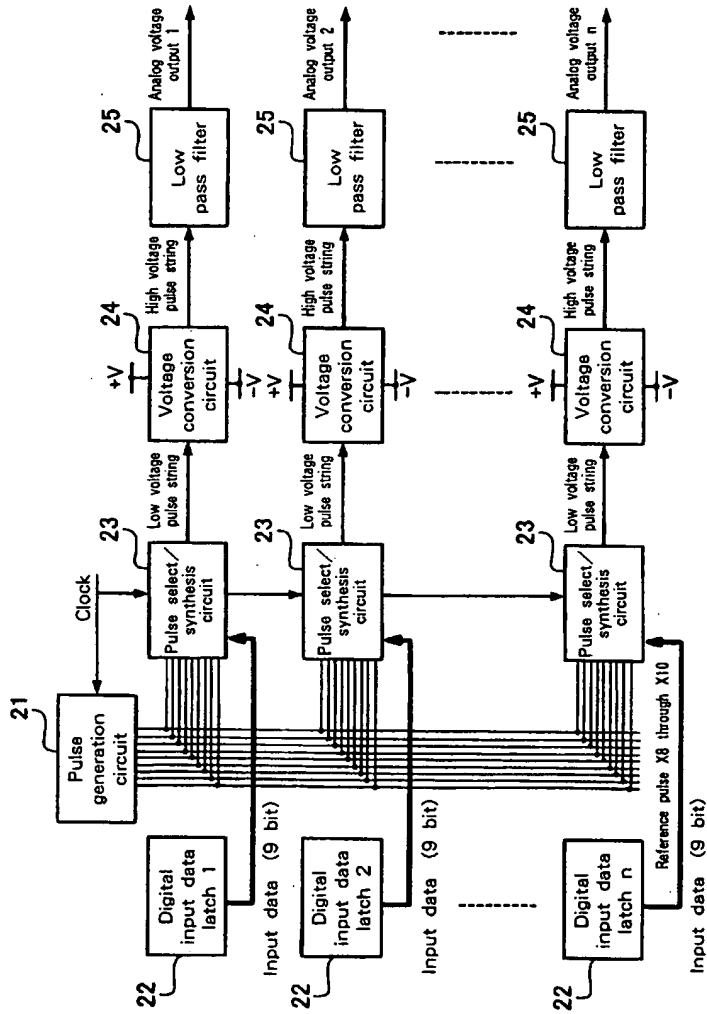
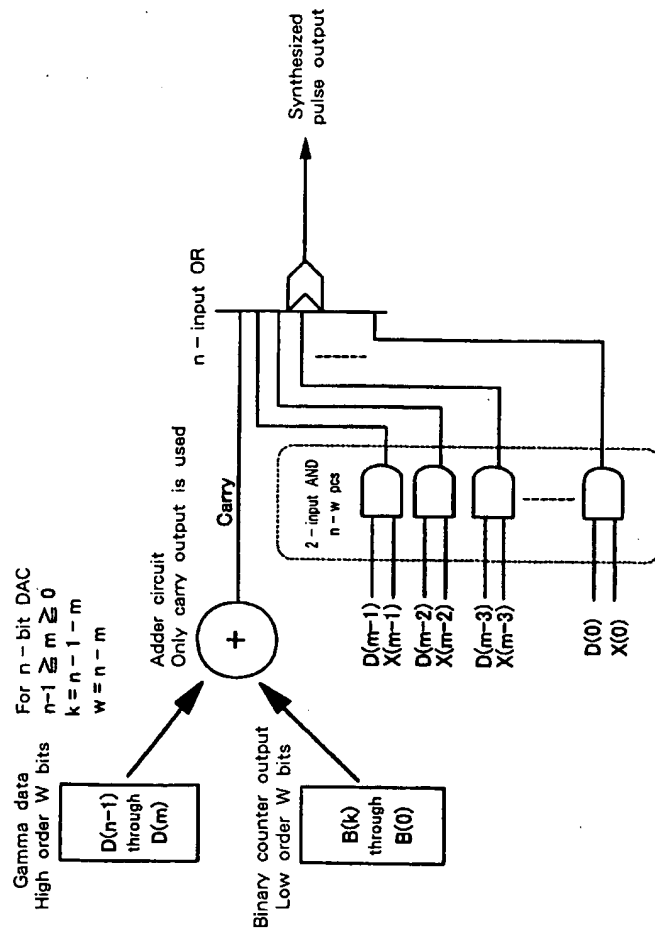


Fig. 1



Configuration for gamma reference voltage generation circuit for LCD source driver

Fig. 2



Details of pulse generation circuit and synthesis circuit for n -bit DAC

Fig. 3

Relationship between the number of divided bits
and maximum frequencies of pulse strings when utilizing
a pulse generation circuit and pulse synthesis circuit for n-bit DAC

Number of divided bits	Maximum frequency of pulse string (Hz)	Ratio of constant switching frequency range to whole input data	Remarks
$W = 1$	f	0	PDM
$W = 2$	$f/2$	$1/2$	Minimum circuit scale
$W = 3$	$f/4$	$3/4$	
$W = 4$	$f/8$	$7/8$	
$W = 5$	$f/16$	$15/16$	
.....	
$W = n$	$f/2^{n-1}$	1	PWM

* Note : Assuming digital input data is n bit

Fig. 4

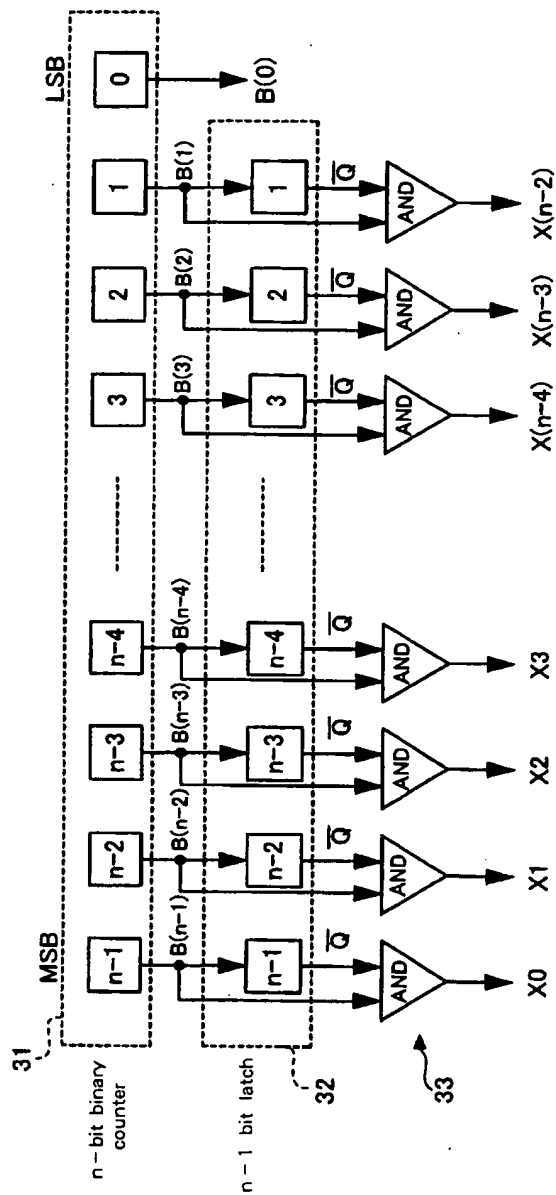


Fig. 5

Typical configuration of pulse generation circuit for PDM type DAC

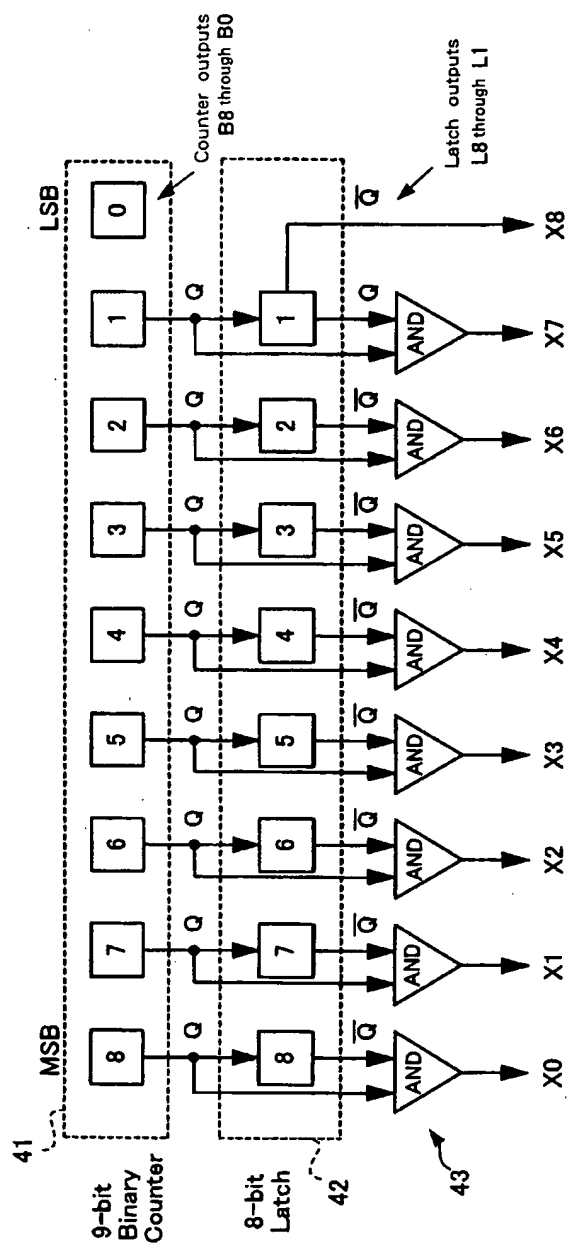
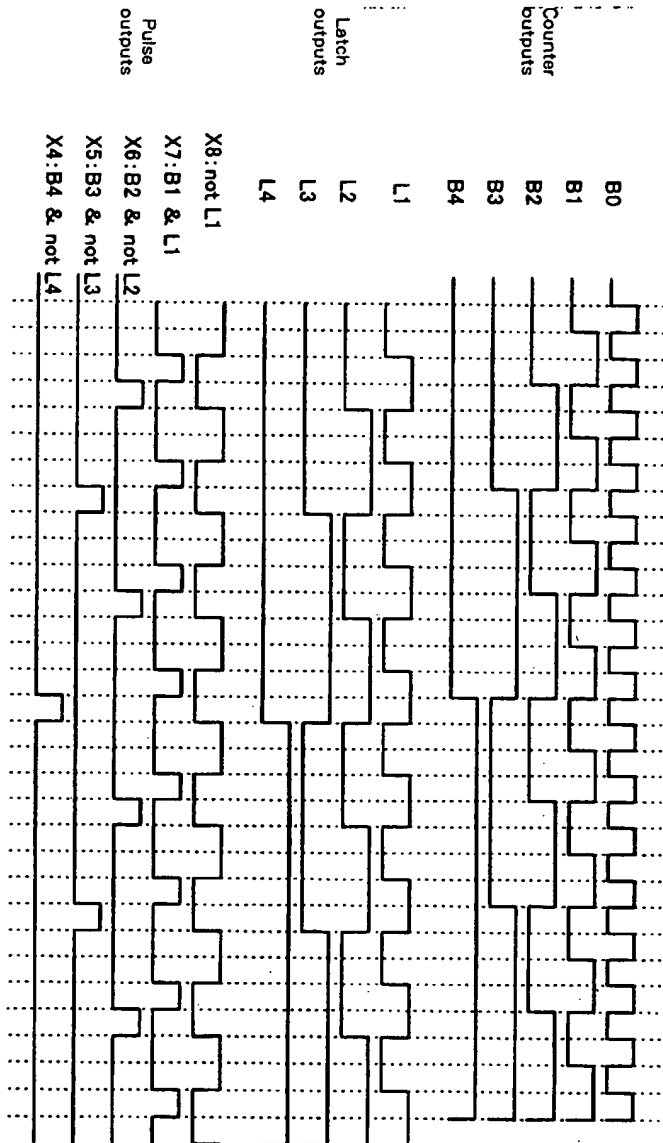


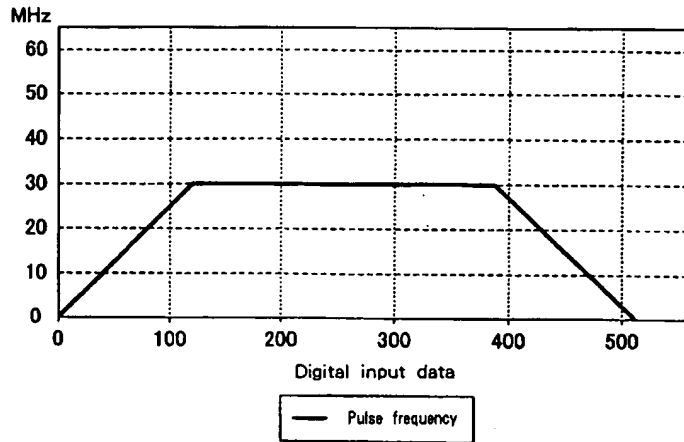
Fig. 6



Example pulse for PDM type DAC

Fig. 7

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Relationship between digital input data
and pulse string frequency for pulse generation circuit

Fig. 8

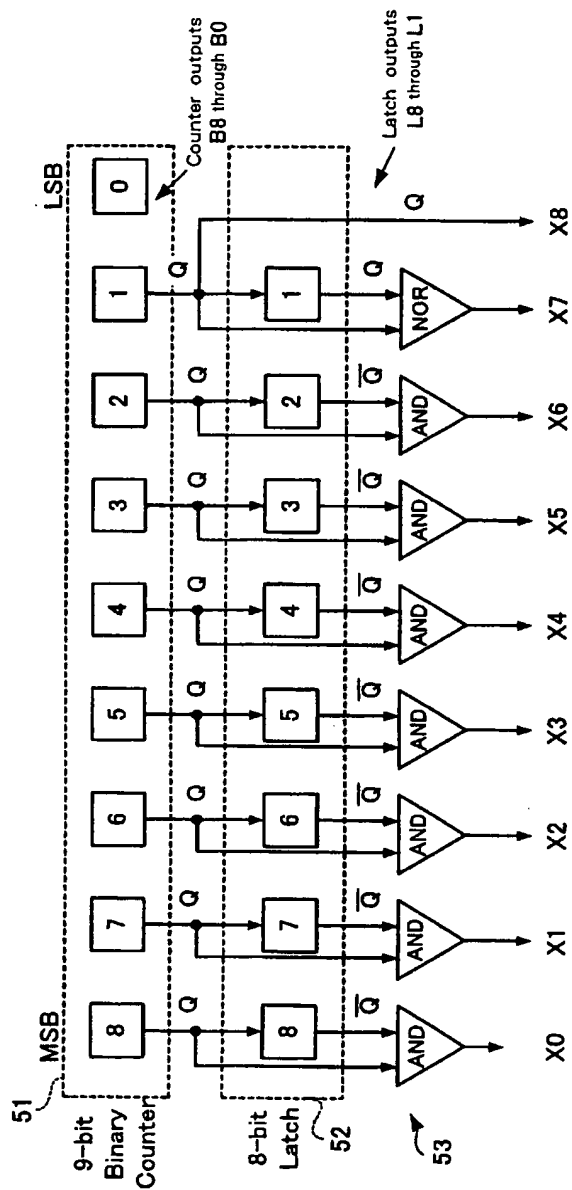
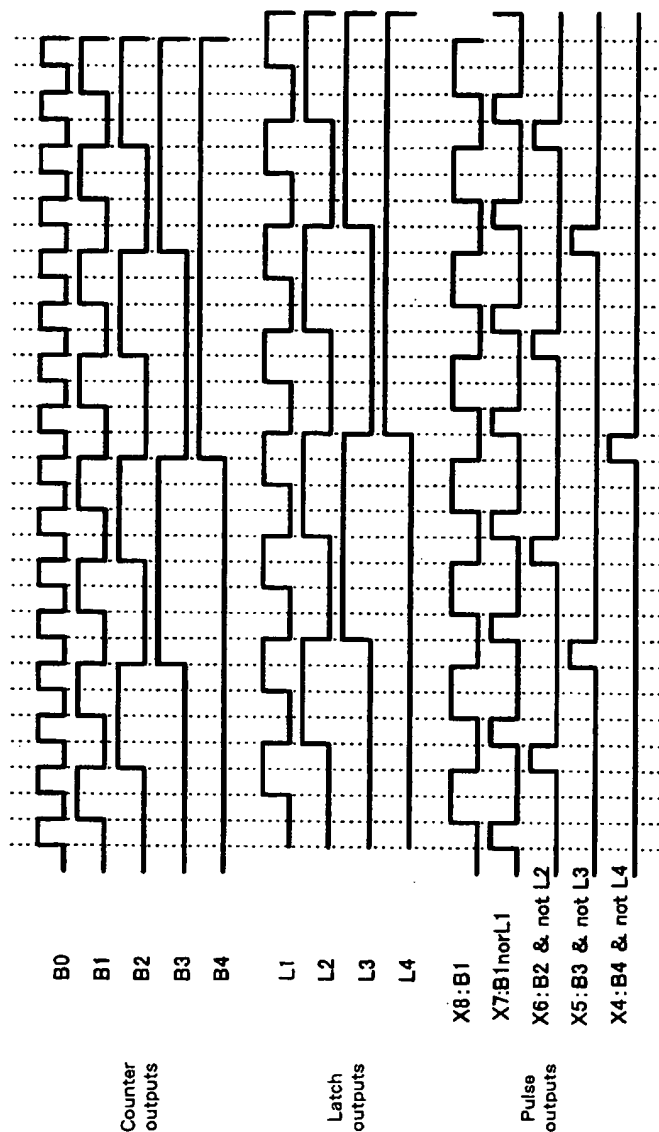


Fig. 9



Example pulse for PDM type DAC of the invention

Fig. 10

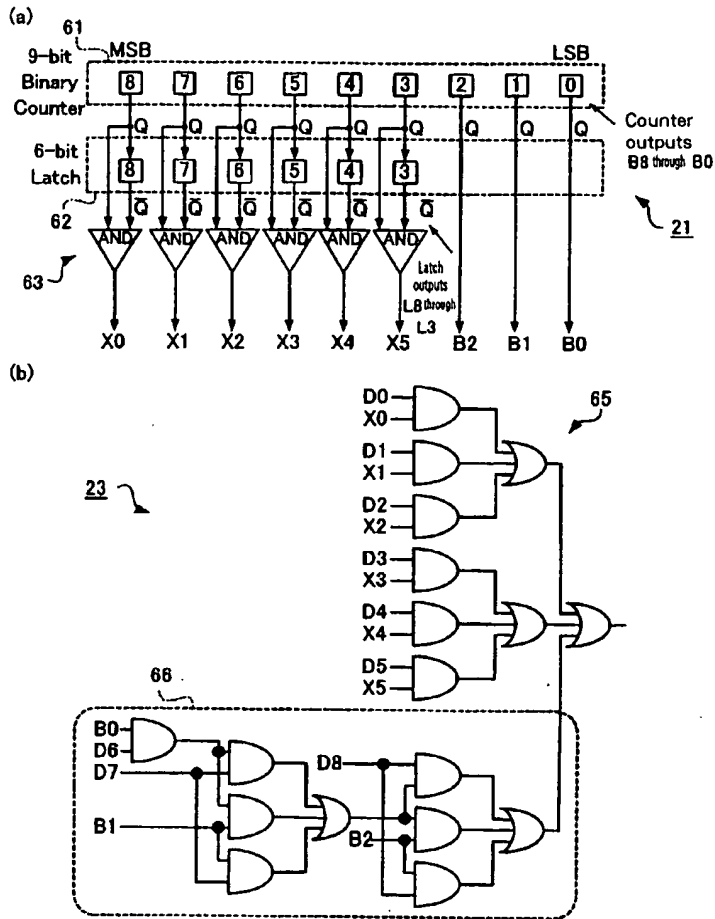


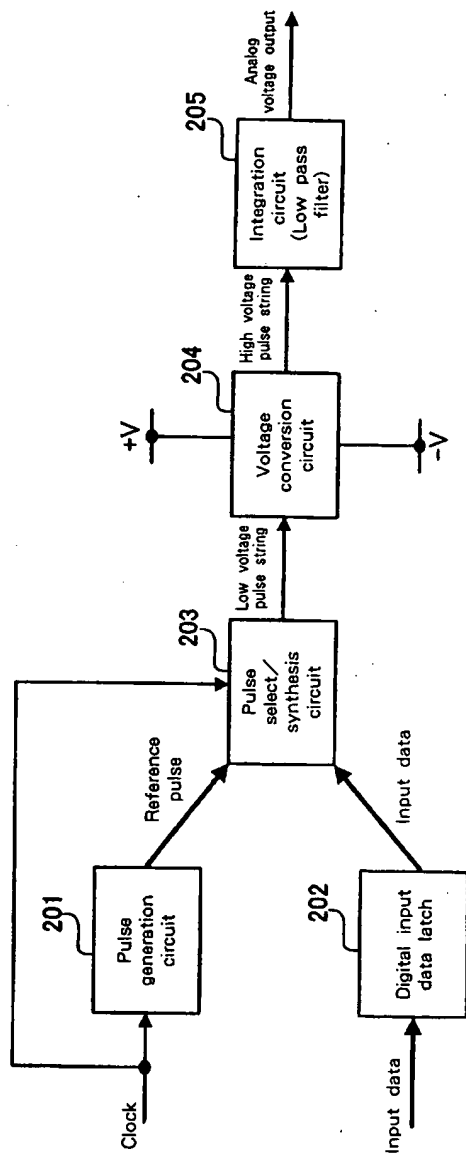
Fig. 11

Comparison of number of
gates between 4 clock unit and 8 clock unit

	4Clock	8Clock
Counter section		
Latch	17	15
2 - input AND	8	6
Pulse synthesis section (1 Set)		
2 - input AND	9	13
3 - input OR	4	5
Pulse synthesis section (10 Sets)		
2 - input AND	90	130
3 - input OR	40	50

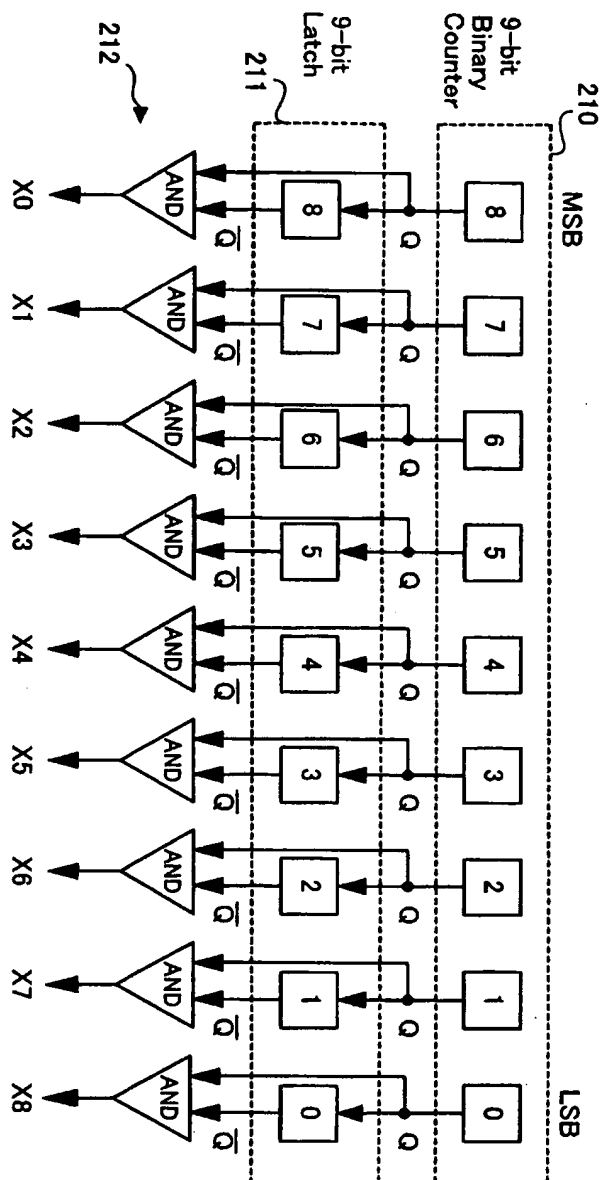
Fig. 12

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Configuration of PDM type DAC

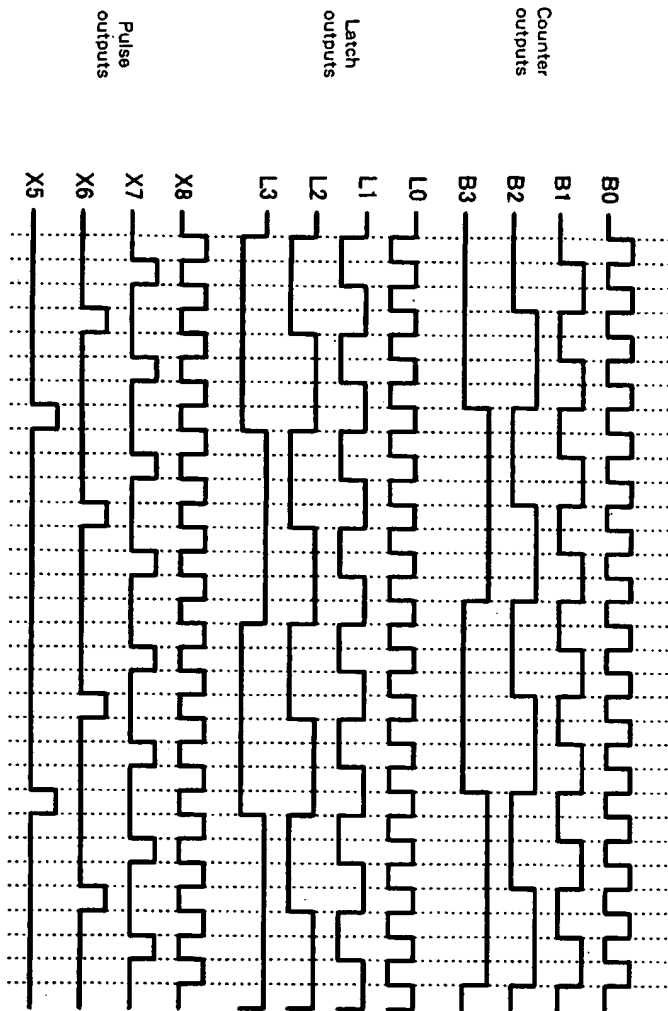
Fig. 13



Configuration of pulse generation circuit for PDM type DAC

Fig. 14

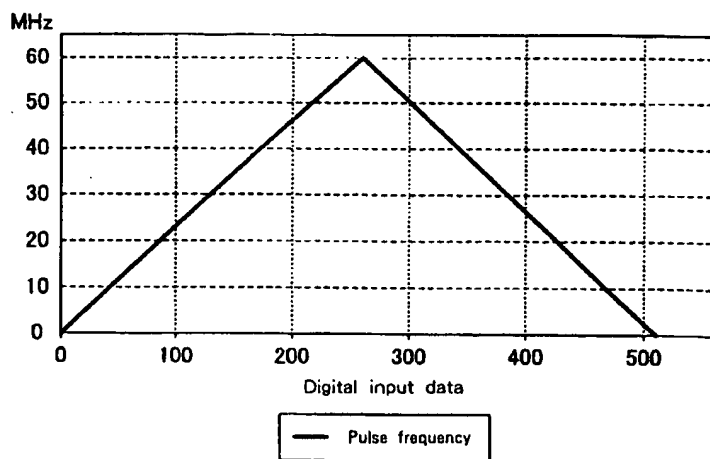
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Example pulse for PDM type DAC

Fig. 15

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Pulse string frequency corresponding to each data

Fig. 16